

Understanding Native Hawaiian Caregivers' Beliefs About Pediatric Asthma Management

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Abstract

Native Hawaiian health beliefs and cultural practices may influence how Native Hawaiian caregivers manage their children's asthma. Understanding the use of cultural practices as an asthma management strategy among Native Hawaiian caregivers who have a child with mild persistent, moderate persistent, or severe persistent asthma may inform the development of effective culturally-based asthma management interventions. A qualitative descriptive methodology with medical anthropology framework was used to describe pediatric asthma management strategies, define cultural asthma management practices, and identify cultural practices caregivers were aware of but did not use. Eighteen face-to-face interviews with self-identified Native Hawaiian caregivers of school-aged children between 5 and 12 years with asthma were interviewed. The study found that Native Hawaiian caregivers across all asthma severity types believed that the perceived cause of asthma was hereditary and environmental exposure. Also, standard asthma management strategies were used by caregivers with an emphasis on preventing exposure to known asthma triggers. If asthma symptoms presented themselves, Native Hawaiian caregivers often managed them with alternative practices before using the prescribed medication. Alternative practices included the use of massage and exposure to salt air. Native Hawaiian caregivers readily discussed awareness of cultural practices. However, cultural practices such as lā'au lapa'au (herbal medicine) and lomilomi (massage) were seldom, if ever, used. The study provides healthcare providers with knowledge regarding Native Hawaiian caregivers and their beliefs about the perceived cause of asthma and strategies for managing asthma, including use and awareness of cultural practices.

Keywords

Asthma Management, Cultural Practices, Native Hawaiian Caregivers

Abbreviations

C = Caregiver
CHS = Committee on Human Subjects
ED = Emergency Department
GED = General Education Diploma

Introduction

State of Hawai'i data from 2016 indicates that pediatric asthma prevalence is highest among Native Hawaiian children at 29.7% compared to 20.4% in white children.¹ In the state of Hawai'i, the emergency department (ED) visits for those 5 to 64 years is 51.9 per 10 000 people of all ethnic groups combined.² Studies found an increase in ED visits when vog was present.³⁻⁵ Vog is volcanic smog with a haze appearance caused by the mixing of sulfur dioxide with the atmosphere.⁶

Native Hawaiian health beliefs and cultural practices may influence how Native Hawaiian caregivers manage their child's asthma. There is limited research and data available on how Native Hawaiian caregivers manage their school-age child's (5–12 years) asthma, including which cultural practices are used and whether caregivers are aware of Native Hawaiian cultural practices to manage asthma. Understanding the use of cultural practices as an asthma management strategy among Native Hawaiian caregivers who have a child with mild persistent, moderate persistent, or severe persistent asthma may inform the development of effective culturally-based asthma management interventions for this population. Based on personal communications with *kūpuna* (elders) and cultural practitioners, Native Hawaiian asthma management strategies are based on maintaining balance in life, preventing asthma through healthy living, and in some cases, using traditional practices such as herbal medicines and massage therapy (Kupuna 1, personal communication, July 25, 2013; Kupuna 2, personal communication, September 17, 2013; and Kupuna 3, personal communication, September 23, 2013).

Consideration of the worldview, health beliefs, and cultural practices of Native Hawaiians may improve pediatric asthma management. The purpose of this study was to describe Native Hawaiian caregivers' practices in managing pediatric asthma.

Methods

A qualitative descriptive methodology with interviews was used. Qualitative descriptive methodology is a type of qualitative research in which the scope is limited and allows for a description of a specific phenomenon.⁷ This methodology does not focus on 1 theoretical framework but rather uses the naturalistic inquiry process.⁸

Research questions and the interview guide used a medical anthropology framework. This framework focuses on the study of health and healing from a cross-cultural and evolutionary perspective.⁹ Interviews were selected to foster "talk story" or sharing of knowledge between the interviewer and interviewee.¹⁰⁻¹²

A convenience sample of Native Hawaiian adult caregivers of school-aged children between the ages of 5 and 12 years with at least mild-persistent asthma from O'ahu and Hawai'i Island were recruited to participate between May 2014 and December

2015. Participants needed to be able to read and speak English and provide at least 70% of the child's care, which included asthma management and daily activities. If more than 1 child was eligible, the participant was asked to share information about the child with the higher asthma severity.

Recruitment included presentations and dissemination of recruitment flyers at Native Hawaiian Health Organizations and community-based organizations on O'ahu and Hawai'i Island. The presentation provided an overview of the study. Interested individuals contacted the researcher who screened them over the phone or in-person to determine eligibility.

Face-to-face interviews were scheduled with the caregiver between May 2014 and December 2015. The interviews were held at an agreed-upon location, date, and time. Each interview ranged from 15 minutes to 90 minutes. All caregivers consented before the interview, with consent to audio record reconfirmed before the interview began.

The interview guide consisted of a series of semi-structured, open-ended questions (see Appendix). The questions asked the caregiver about his or her beliefs about the cause of asthma, caregiver management strategies, and styles of asthma management. The final question explored the caregivers' knowledge of Native Hawaiian cultural practices used to manage asthma. All interviews were transcribed verbatim and reviewed by a community member for accuracy.

A thematic form of content analysis was used to analyze the data. The purpose of this analysis was to provide knowledge and insight into a phenomenon.¹³ Coding reliability was established through a systematic approach to data analysis. The researcher and 2 additional coders independently reviewed the transcripts and coded them. The team met weekly to discuss and establish codes, identify categories, and finally agree on themes. nVivo 10 (QSR International) was used to keep data organized.

The research was reviewed and approved by the Committee on Human Subjects at the University of Hawai'i at Mānoa (CHS #21331) and the Native Hawaiian Health Care Systems Institutional Review Board at Papa Ola Lōkahi (#13-N-11).

Results

Forty-one individual caregivers were referred to the study, of which 33 (80%) were screened and 26 (78%) eligible. Of the 26 eligible caregivers, 18 (70%) completed the interview, and 8 (30%) were not interviewed because they were no longer interested, were unable to be reached, or missed the interview time.

A total of 18 Native Hawaiian caregivers from O'ahu (n=15, 85%) and Hawai'i Island (n=3, 15%) were interviewed. These caregivers had a child with mild (n=6, 33%), moderate (n=7, 38%), or severe (n=5, 27%) persistent asthma (Table 1). Sev-

enteen caregivers were female, 1 was male, 15 were married, and 11 employed with a household income range of \$35,000 to \$50,000. Caregivers of children with mild and moderate persistent asthma completed a high school diploma or General Education Diploma (GED; n=7). All caregivers of a child with severe persistent asthma received at least some college education (n=5) as shown in Table 2.

Two overarching themes and 6 subthemes emerged from the categories: asthma and its causes (theme 1) included 2 subthemes of heredity and environmental exposure; and asthma management (theme 2) included 4 subthemes of engaging in physical activity, alternative practices, responding to asthma symptoms, and preventing exposure to asthma triggers. Each theme and subtheme are presented with direct quotes provided.

Table 1. Caregiver and Child Asthma Severity

Asthma Severity Type	N	%
Mild	6	33
Moderate	7	38
Severe	5	27

Table 2. Participant Characteristics

Characteristic	N	%
Marital Status		
Single	1	6
Married	15	83
Partnered	2	11
Education Level Completed		
High School/GED	7	39
Some College	5	27
College Degree	3	17
Graduate/Professional	3	17
Employment Status		
Full-time	8	44
Part-time	3	17
Unemployed	7	39
Income Range		
Less than \$35,000	4	22
\$35,001–\$50,000	8	44
\$50,001–\$65,000	3	17
\$65,001 or more	3	17

Abbreviation: GED, General Education Diploma

Theme 1. Asthma and its causes

Hereditary was the perceived cause of a child's asthma diagnosis. Eight of the 18 caregivers consistently attributed the child's asthma to a positive family history of asthma and identified other family members with asthma. Two caregivers from the mild persistent asthma group could recount up to 5 generations of family members with asthma. Three caregivers from the severe persistent asthma group shared that asthma was hereditary because their parents had asthma. One caregiver from severe persistent asthma group stated, "Okay you know my biggest probably take on it is that it's hereditary, because my father was badly asthmatic." Case (C) 3. Similarly, 3 caregivers from the moderate persistent asthma group believed that it was inevitable that the children have asthma. A caregiver from the moderate persistent group stated, "Well my grandparents had it my great grandparents had it, my dad had it, so now I have it, and now my children have it." C5.

All caregivers discussed exposure to environmental and household triggers. Seven caregivers (mild=1, moderate=4, severe=2) described household irritants as a cause of asthma symptoms. Irritants included odors such as those associated with cleaning solutions, laundry detergent and softener, dryer sheets, and bleach. Household triggers such as dust, smoke, pollen were described by 11 caregivers (mild=5, moderate=4, severe=2). Sixteen caregivers (mild=5, moderate=7, severe=4) minimized exposure to these household triggers through frequent vacuuming, dusting, and washing. A mild persistent caregiver stated, "My [spouse] is almost sterile with cleaning the house, I mean yeah, it gets kind of hard sometimes but [the], [the] lifestyle is just made sure everything is super clean, so the house is clean." C17.

Environmental triggers such as vog, changes in weather, or pollen were discussed by 12 caregivers (mild=4, moderate=5, severe=3). Caregivers were mindful of weather patterns and took preventive steps when the weather changed, or pollen was in the air. In all, exposure was consistently described as a cause of asthma, but the extent varied by asthma severity. Vog was expressed most among caregivers (n=12, mild=4, moderate=5, severe=3) as the cause of his/her child's asthma. A caregiver from the mild persistent group stated, "When we know the vog is going to be present, we try to keep him indoors as much as possible. Not too much outside." C1.

Theme 2. Management strategies

Regular physical activity was described as both a cause and management strategy of asthma. Six caregivers of children with moderate persistent asthma described that engaging children in physical activity prevented asthma symptoms and built lung capacity. Similar descriptions were found among caregivers of children with severe persistent asthma (n=5). Among those with mild persistent asthma (n=3), physical activity was associated

with triggering asthma symptoms. Sixteen caregivers, in general, believed in the long-term benefits of engaging in physical activity. They often encouraged the child to participate in simple activities such as running in the yard or park, kicking, hitting a ball, or group sports. A caregiver from the mild persistent group stated, "...I think ever since the age he started sports; his whole episodes have reduced dramatically..." C17.

Caregivers across all asthma severity types (mild=6, moderate=7, severe=5) focused on managing asthma symptoms using alternative practice strategies favoring home remedies and other practices before prescribed medication. The use of menthol-based ointment and the use of essential oils on a cloth or in a humidifier were commonly discussed by caregivers (mild=3, moderate=4, severe=1). Often, menthol-based ointment was used in conjunction with massage and dressing warmly. Caregivers described that the massage relaxed the child and the menthol in the ointment opened the child's airways.

Awareness of commonly known cultural practices such as *lā'au lapa'au* (herbal medicine) and *lomilomi* (massage) was expressed by 11 caregivers (mild=4, moderate=4, severe=3). However, caregivers did not use *lā'au lapa'au*, citing that they did not know any practitioners or knew practitioners who died. They expressed that *lā'au lapa'au* required in-depth knowledge around gathering, preparing, and administering the medicines. *Lomilomi* was used frequently among caregivers (mild=3, moderate=6, severe=3). However, caregivers used the word *lomilomi* to mean any form of massage and not necessarily the traditional practice of *lomilomi*. *Lomilomi* is a cultural practice of massage with specific protocols and intent.¹⁴

Other practices used to manage asthma symptoms included going to the ocean/saltwater and focusing on living a balanced life. Nine caregivers (mild=5, moderate=4, severe=3) found ocean water a natural way to detoxify the body. Most often, caregivers described having the child play at the seashore and swim in the ocean. In terms of living a balanced life, 6 caregivers (mild=2, moderate=2, severe=2) reported a balanced life necessitated a strong spiritual connection. According to caregivers across all asthma severity types, spirituality could be defined as maintaining a relationship with a higher power through prayer and meditation. One caregiver from the moderate persistent group described what her grandma did growing up, "...if we got sick, my grandma would take us down to the beach because she said the salt air would help us cleanse the inside of our immune system. Until that, I still believe in that, I do that to my little one, especially to my newborn, if I don't have a humidifier, then I'd go out there and you know spend half of the day letting them inhale all of that salt air you know." C7.

Caregiver response to asthma included having a plan to address asthma symptoms and maintaining awareness of when a child with asthma was ready to self-manage his or her care. Thirteen caregivers (mild=4, moderate=5, severe=4) were assessed

through observation and assessment of active symptoms what to do next for a child with asthma symptoms. Four caregivers of a child with mild persistent asthma described observing the child before intervening. Similarly, 5 caregivers of a child with moderate persistent asthma established a process to respond to asthma symptoms. The process included having the child remain inside, take a shower, rub down, and rest. If symptoms worsened, the child would be taken to the emergency room or the doctor's office for further direction on asthma care, including medication use. Moderate persistent asthma caregivers provided a nurturing environment that assisted with responding to asthma. For a child with severe persistent asthma, 4 caregivers were vigilant in asking the child about his or her symptoms. Interventions depended on how the child responded. If the asthma symptom was a cough, then the caregiver monitored the cough; if wheezing was present, then the child was placed on the nebulizer. Consistently, 2 caregivers of a child with mild and severe persistent asthma indicated that children who were 7 years or older with asthma were ready to take on responsibilities related to self-management. Responsiveness to care relied on caregivers' observations and assessment of the child with asthma. This responsiveness required the caregiver to intervene using various levels of non-medical and medical care.

Preventing exposure to asthma triggers is key to asthma management, as is the use of medication. Caregivers across all severity types indicated that vigilant keeping of a clean home prevented exposure to asthma triggers. As such, 6 caregivers (mild=2, moderate=4) monitored children's exposures to known triggers such as mold, dust, and cockroach droppings. Four caregivers (mild=2, moderate=2) described monitoring weather reports for vog to prevent asthma, 1 caregiver from the mild persistent group commented, "...keep tabs on the weather, kind of just know when the vog is coming and stuff like that." C2. Similarly, caregivers of all asthma severity types (n=18) discussed the use of medication. However, the use of daily control medications was infrequently discussed. Medication was used to treat asthma symptoms but seldom used to prevent them. Caregivers also described the use of controller medication and the importance of using the medication. A caregiver of the severe persistent group stated, "...just trying to explain, how it can be a benefit, and once they got older and realized that it did benefit them, they'll go and get it themselves." C15.

Discussion

Through in-person face-to-face interviews, Native Hawaiian caregivers shared their perspectives about asthma management. Consistent with other ethnic and racial minority groups, the perceived cause of asthma was both heredity and environment.¹⁵⁻¹⁹ Native Hawaiian caregivers, however, did not describe asthma as unpredictable and "silent," which was found among Mexican mothers.²⁰ Rather, Native Hawaiian caregivers watched for symptoms that were considered precursors to an asthma episode. As a result, Native Hawaiian caregivers were

hypervigilant. The literature on Hispanics and Native Hawaiians described the perceived cause of asthma through the worldview of a cultural health belief system.²¹⁻²² This worldview identified the cause of asthma to be an imbalance. For Native Hawaiians in this study, *pono* (balanced, harmonious life) was discussed to manage asthma, not as a cause.

Managed pediatric asthma included medication, learning asthma self-management, physical activity, living environment, and alternative management strategies. These management strategies were extensively discussed in the literature among ethnic/racial minority groups.^{18,23-25} However, specific to the Native Hawaiian caregivers was the use of saltwater as treatment of asthma. Also, spirituality using prayer and belief of a connection with a higher being was found among Native Hawaiians and Hispanics.^{16,26-27}

Medication management was used among caregivers. However, in previous studies, ethnic/minority caregivers expressed fears associated with the long-term use and potential side effects.^{19,23} Among Native Hawaiian caregivers, prescription medication was used when symptoms were exacerbated. Caregivers in this study did express similar concerns on the long-term use of medication.

Caregivers described self-management strategies as an approach into which the child grew. Native Hawaiian caregivers worked with his or her child to identify symptoms and the appropriate management strategy. As the child grew, he or she would independently manage his or her asthma symptoms. Similarly, a study among Mexican American and African American parent and child dyads demonstrated a shift in responsibility as the child aged.²⁸

The lived environment and weather impacted how a caregiver managed his or her child's asthma. For Native Hawaiians, this meant that caregivers monitored weather reports and adjusted a child's activity based on the weather reports, and clothing them accordingly. Maintaining a clean home to manage asthma was found among Native Hawaiians and other ethnic/racial minority groups.²⁹⁻³⁰

Alternative management strategies such as menthol-based ointment, essential oils, and massage were used by Native Hawaiians and other ethnic minority groups. The use of menthol-based ointment was discussed among Native Hawaiian caregivers and found to be a strategy used among Hispanic groups.³¹ For Native Hawaiians, menthol-based ointment was used in conjunction with massage and often a strategy passed down from generation to generation. Similarly, essential oils were used in a humidifier or on a cloth placed nearby for inhalation. For Hispanic groups, menthol-based ointment and essential oils, and other herbal remedies were often used to manage a child's asthma.^{21,31} Throughout this study, caregivers frequently spoke about the use of seawater. The literature described the

use of saltwater cleanses or exposure to sea air as part of the healing practices. Seawater was considered a universal remedy by Native Hawaiians.¹¹

The use of traditional cultural arts may be considered as a management strategy. Among aboriginal children in Australia, the use of singing and playing the didgeridoos improved asthma.³² Similar Native Hawaiian traditional cultural arts such as *hula* (dance), *meleana* (singing), and *oli* (chanting) may be possible asthma management strategies.

The strength of this study included increasing awareness of the cultural belief's influence on health practices. The study shows that Native Hawaiian caregivers are interested in learning about Native Hawaiian cultural practices for managing pediatric asthma. The study contributes to the literature by describing Native Hawaiian caregivers' beliefs about the causes of asthma, strategies for managing asthma, and awareness of Native Hawaiian cultural practices related to asthma.

Study limitations included methodology, method, sample size, and selection bias. The use of qualitative descriptive is not grounded in a specific qualitative philosophy. Instead, it is based on existing knowledge and seeks to describe the experience using the participant's words.³³ The use of a one-time cross-sectional face-to-face interview with the Native Hawaiian caregiver fostered a talk-story approach with caregivers. However, because the interview was a one-time occurrence, it did not allow for an in-depth gathering of the caregiver's lived experience. Due to the convenience sample and limited size, the results are not generalizable.

Conclusion

Healthcare providers working with Native Hawaiian caregivers who have a child with asthma should not assume that they implement cultural practices or are knowledgeable about cultural practices in managing asthma symptoms. Providers should assess the caregivers' health belief system and how culture influences this belief system. This assessment will orient the provider to the caregivers' worldview and aid in developing a meaningful asthma action plan. The development of an asthma action plan is a part of the National Asthma Education Prevention Program recommendation.³⁴ An assessment on the use of medication in conjunction with cultural practices may reduce potential harm. As children get older, assess their readiness to self-manage. Once ready, provide age-appropriate health education.

Future research should further explore the role and influence of the living environment and the role and influence of culture on health practices among Native Hawaiian caregivers whose child has mild, moderate, or severe persistent asthma. Exploring these areas to understand the impact of the lived environment and how caregivers manage asthma symptoms may provide a broader understanding of how pediatric asthma is managed.

Conflict of Interest

None of the authors identify any conflict of interest.

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Appendix

Interview Questions

Before we start, can you tell me, what is one thing you do with your child/children?
[Summarize and begin interview questions]

1. What do you believe causes asthma?
2. How do you take care of your child's asthma?
 - a. What treatments have you used?
 - b. What treatments do you use?
 - c. Which treatments do you consider to be a Native Hawaiian cultural practice?
 - d. Which cultural practices have you tried?
 - e. What was your experience with the cultural practice?
 - f. How do you tell the difference between a Native Hawaiian cultural practice and one that is not?
 - g. What role does culture play in how you take care of your child's asthma?
3. Are there other Native Hawaiian cultural practices you know about that are used to take care of asthma?
4. If yes, what?
 - a. How do you find out about the cultural practices for taking care of asthma?
 - b. How does the cultural practice work?

That is the end of our questions. Is there anything else you would like to share on the topic of how you take care of your child's asthma?